December 31, 1998

MEMORANDUM FOR DAVID J. BARRAM

ADMINISTRATOR

FROM: ROBERT A. PECK (signed “Peck”)

COMMISSIONER PUBLIC BUILDINGS SERVICE

SUBJECT: Construction Excellence

I am pleased to transmit this report on Construction Excellence. This is the latest Public Buildings Service initiative to examine a core business area to improve our project delivery processes. These improvements will result in our delivery of higher quality capital improvements projects to the General Services Administration's (GSA) customers while using the best business practices.

Over 100 GSA experts involved with the construction process participated in making Construction Excellence a reality. Over the past six months, the GSA team worked with over

200 experts from the private sector in a virtual organization to shape the recommendations in this report. The recommendations form a "**Construction Excellence Methodology,"** the most significant elements of which are:

* **obtaining customer commitments** to project scope, schedule, and cost;

* **simplifying construction documents** to reduce errors;

* **adopting phased construction** for foundations, base building and tenant build out;

* **using price and qualifications-based procurements** for construction contractors and retaining them earlier in the project; and,

* **consolidating technical support services** under a comprehensive technical services contract.

This final report is really a beginning. We will release it to the public in the next few weeks. We will immediately move forward with the implementation phase to begin putting the recommendations in place. We will continue to engage the private sector at both the national and regional levels. A Construction Excellence internet site has been employed to get private sector feedback and share program information. I am proud of this product. Let me know if you would like further information.

CONSTRUCTION EXCELLENCE

SPECIAL REPORT

DECEMBER, 1998

"The General Services Administration (GSA) desires to develop new ways to deliver the highest quality construction for the best value, using the best business practices, and thus making GSA construction a hallmark in the building industry"

WILLIAM R. LAWSON, FAIA

SPECIAL ASSISTANT TO THE COMMISSIONER

PUBLIC BUILDINGS SERVICE

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INTRODUCTION

The General Services Administration (GSA) has had one of the largest construction programs (public and private) in the United States. **Over the next 5 years, we are projecting approximately $3.1 billion of new construction ($2.7 billion for the courthouse program) and $2.5 billion of major repairs and alteration (R&A) work, subject to appropriations and authorization by the appropriate administration and congressional authorities.**

Widely recognized as an industry leader, GSA is constantly striving to improve the way it does business, so that we can consistently provide timely and high-quality services to our customers and the taxpayers for the best value. Ensuring customer satisfaction is particularly important because GSA's customers—other federal agencies—can choose whether or not to use GSA's construction services. In addition, the Government Performance and Results Act (GPRA) requires government agencies such as GSA to, among other things, develop goals (extraordinary customer satisfaction, cost growth below 5 percent of the total project's cost, etc.) and to develop strategic performance plans for completing and measuring the goals (i.e., benchmarks). Our Construction Excellence program will help GSA comply with GPRA's requirements.

To ensure that we realize our vision of being the best public real estate organization in the world and, therefore, continues to be the construction organization of choice for its customers, **Robert A. Peck, the Commissioner of GSA's Public Buildings Service (PBS), initiated the Construction Excellence program.**

In June 1998, Mr. Peck tasked William R. Lawson, FAIA, to lead the Construction Excellence initiative to identify specific areas in which GSA's construction program could be improved and to recommend ways to achieve the improvements. A significant feature of the initiative was our partnership with the private sector—our primary resource to deliver our projects. We relied on the private sector to advise us on the best practices to employ to improve our construction program. That input was essential to forming our conclusions and recommendations. This report conveys the results of our effort.

The following report highlights our findings from our public/private team approach and our recommendations to employ new business practices, culminating with our proposed Construction Excellence Methodology which is the focal point of our new business approach. We have also developed a rigorous Implementation Plan which outlines a strategy to obtain national consensus and commitment to adopt these new business practices around the country over the next year.

APPROACH

What is Construction Excellence?

It is generally accepted that GSA, through its Design Excellence initiative, has elevated itself to a leadership level in the building industry in designing quality workplaces for federal workers. We now have the opportunity to provide the same level of leadership in the delivery of construction projects for the best value.

We focused our attention on the project delivery phase and processes, establishing three goals that, if accomplished, would result in significant cost and time benefits:

- **Employ the best practices that will result in the best project for the best value**
- **Procure the highest quality construction services talent as early as practical**
- **Establish reliable budgets and manage to them**

Our objective was to develop, in close collaboration with the building industry, those recommendations that could have a significant impact on our project delivery methods and that would be accepted by industry as innovative business practices.

In general, the Construction Excellence effort was supported by a "virtual" organization of GSA and private-sector leaders. We formed a Steering Committee and three teams aligned with the three goals above: Business Practices Team, Procurement Team, and Budget Team. The teams, comprising GSA personnel, with support from industry and associations, identified areas within the construction program that are problematic and recommended specific actions that GSA could take to develop a more effective construction program and ensure that our customers are highly satisfied with GSA's services. In general, we attempted to recommend actions that would result in significant improvements to our project delivery practice that will have cost and time benefits.

Throughout the Construction Excellence effort, we maintained an ongoing dialogue with major industry associations, including:

- **the Associated General Contractors (AGC),**
- **the Construction Management Association of America (CMAA),**
- **the American Institute of Architects (AIA),**
- **the Building Owners and Managers Association (BOMA), and**
- **major firms in the construction industry who do business with us.**

We conducted special roundtable discussions, attended local chapter meetings and workshops, and participated in annual conferences. Throughout this endeavor, we have received valuable input from the associations relative to our problems, solutions, and potential obstacles to improvement. We also obtained input from some of our customers. Finally, we held numerous meetings, conference calls, and written dialogue with GSA regional operations staff to gain support and solidify the final recommendations.

On September 8 and 9, we held a Construction Excellence Symposium. It was attended by more than 150 people, including key industry leaders from the private sector, professional associations, academia, and Federal agency officials. The symposium provided GSA an opportunity to formulate, in a public-private forum, new and innovative recommendations to be incorporated in the Construction Excellence program. This symposium was the "high water mark" of our public-private partnership where, **over a rigorous 48 hours, we presented our initial team findings; conducted break-out sessions, led by the private sector, to debate these findings; and conducted team work sessions to incorporate private sector input, resulting in the key recommendations for this report.** The summary from the symposium is included in the appendix and is on our Web site, accessible to the public.[1]

The entire effort culminated in the recommendations in this report. Realizing the wide range of ideas that span the building industry, the industry experts focused on those that could make a difference to GSA and move us into a leadership role in the construction industry. **The most significant recommendations, when combined, form the Construction Excellence methodology that can revolutionize how GSA delivers large-scale construction projects.** This new methodology will serve as a precedent for innovative practices in the public and private sector and thus make GSA construction the hallmark we are looking for.

[1] http://www.gsa.gov/pbs/constructionexcellence/

FINDINGS

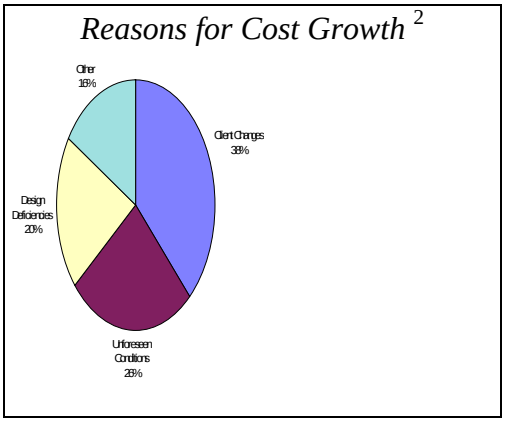
Using historic performance information, benchmark data, and customer and private industry input, we identified a number of areas within the construction program that could be improved. The following subsections summarize our findings.

Business Practices

To a large extent, GSA business practices lack vehicles and incentives for a total team effort to accomplish the best project for the best value, and in some cases, impede our ability to complete a project cost-effectively. **We focused our efforts in three areas: GSA's interactions with our federal customers, the construction document preparation process, and our relationships with our contractors.**

CUSTOMER INTERACTIONS

GSA's practices as they relate to its federal agency customers contribute significantly to cost and schedule growth. Often, customers are dissatisfied with the finished product. Evidence of that growth can be seen in the number of changes that customers request; **between 33 and 43 percent of the cost growth on major new construction and repair and alteration projects results from customer changes.**[2]



We believe that much of the difficulty can be attributed primarily to two factors. **First, GSA does not do a very good job of ensuring that, before beginning a project, we have a mutual understanding with our customer of the scope, schedule, and budget for the project. Second, GSA and the customer do not have a mutual commitment to maintaining the scope, schedule, and budget,** nor do they have an agreement concerning the consequences of subsequent changes. Further, we do not have an established discipline (i.e., decision process) that ensures we are maintaining scope, schedule, and cost during the delivery process. Thus GSA cannot hold customers accountable for the changes they make.

The AGC maintains that within the building community, the most significant reason for change orders and claims arise from customer changes after design development.

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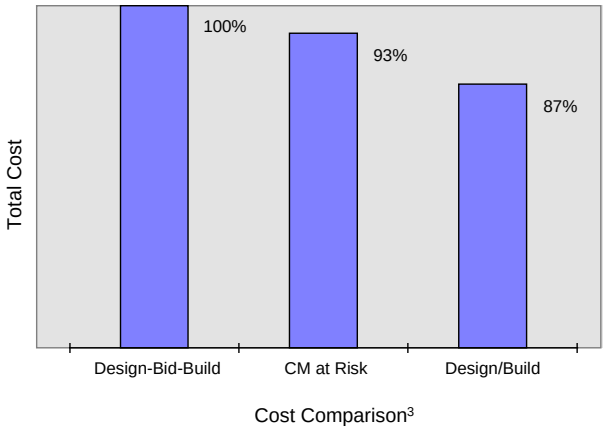
[2] From Cost Growth Study of 47 GSA projects (see appendix).

Because mutual understanding and commitment are lacking, the customer often changes the scope as the project progresses. Changes in scope can quickly result in cost overruns and schedule delays. For the most part, cost overruns have been absorbed by GSA. Historically, GSA has ignored the relationship between the cost of construction and the rent we charge our customers. Instead, our customers pay a market-driven rent regardless of how much the building costs. Even when a customer pays the direct costs for space changes, GSA often absorbs the extended overhead and delay costs.

In addition, our customers often mistakenly believe that we are obligated to spend all funds appropriated for a project. Consequently, if we are projecting an unobligated balance, our customers often request "additions" to the scope because they currently realize no benefit from returning these balances.

CONTRACTOR RELATIONSHIPS

GSA began a partnering program almost 10 years ago with the asbestos abatement contract for the Phillip Burton Building in San Francisco. Partnering was the first time GSA formally acknowledged that human beings run construction companies. At the time, the partnering program "shattered" the paradigm of how we dealt with contractors. However, since then, partnering has, in some cases, been given only lip service, both by GSA and its contractors.



Cost Comparison[3]

The lack of commitment on both sides can be attributed primarily to the timing of the creation of the partnership. As we can see from the Georgia Tech study in the appendix, design-build projects seem to be delivered faster and more economically than traditional design-bid-build projects.[3] **Industry has indicated that a major reason for this is that design-build affords the opportunity to form a complete team early in the design phase** that agrees to the project objectives and assists through participation in design development in achieving these objectives in a cooperative manner. Current project-delivery methods do not acknowledge the valuable insight contractors bring to the design process. Instead, GSA selects the majority of its construction contractors *after* the A-E has completed the construction documents. The selection process has either one step based on low bid or a two step process based on award to the lowest priced technically acceptable pro-

[3] Cost Comparison from Georgia Tech Guide to Project Delivery (see appendix).

posal. These processes are not ideal models for selecting a construction partner for the following reasons:

- Contractor selection occurs after GSA and the A-E have invested significant time and capital developing the design. Therefore, they do not want to hear any "bad" news from their new partner, for example, bids that do not match the architect's estimate or change orders submitted immediately after a kickoff meeting.

- **Selections based on the lowest price sealed bid leave too much to chance.** Even if qualified contractors are preparing the bid, problems can occur if a subcontractor misinterprets a specification or is overly optimistic in its assumptions.

- Construction systems and materials are unilaterally selected by the A-E. Even the A-E community will concede that it is not the best member of the development team to make these decisions.

CONSTRUCTION DOCUMENTS

Through its Design Excellence program, GSA has identified and hired some of America's most respected and talented architects. These architects are selected for their ability to produce highly crafted and customized designs for our clients and the public. And the work they have produced is exemplary. No two buildings produced under the Design Excellence program are alike. In fact, GSA takes pride in the unique qualities of each project and each design.

However, many GSA projects experience cost overruns and time delays that can be attributed to design deficiencies **(about 23 percent of project cost growth results from design deficiencies).** Moreover, an inordinate number of GSA projects end up in construction contract disputes, particularly in the area of customized building components, such as curtain walls. Claims and litigation have become such a significant factor in our budget that a national study is under way to get a clear picture of the magnitude of the problem.

The typical reaction of procurement officials to this problem is to accuse the architect of preparing a poor set of construction documents. But this problem is occurring in too many locations and with different architects. Instead, **we believe that the problem rests with the demand GSA places on architects to follow rigid, complex construction document preparation and procurement guidelines** that require competition for customized products typically found in GSA buildings.

Specifically, in some instances, architects are required to provide too much detail in the construction documents; that is, they are required to include "constructability" information more appropriately addressed in the shop drawings prepared

by the contractor and its suppliers. Because it is not practical to expect architects and their design teams to anticipate every construction-related detail, particularly considering the customized nature of GSA buildings, the overly detailed construction documents result in numerous change orders and disputes. In the private sector, architects typically prepare construction documents only in sufficient detail to portray the physical characteristics of the building and allow for the establishment of a contractual agreement. The contractor and its suppliers are responsible for developing the specific detailed design and techniques to be used during the construction of the buildings.

With regard to customized products, the architect is required to consult with suppliers regarding the design, and then to issue a "nonproprietary" specification for bid. This specification frequently contains ambiguous instead of proprietary language under the guise of promoting competition. This language allows inferior manufacturers to submit unreasonably low bids to the general contractor. These contractors, seeking any advantage to win the procurement, accept the bid, and the government is left with an inferior product, or additional charges to receive an acceptable substitute.

In contrast, when developing private construction projects, architects typically work closely with prequalified suppliers of customized building products and develop details collaboratively with a single manufacturer. The manufacturer takes on a significant proportion of the responsibility for developing the detailed design and specifications for the component system. In this way, previous fabrication and construction experience can be recycled into their current designs.

Management and Cost Control

As part of this endeavor, we reviewed the process used to develop project budgets, as well as the tools GSA uses to manage projects and reduce project costs. The budgets developed using the current process are of concern because they often are underestimated or budgets are arbitrarily reduced. On the other hand, cost control/reduction is of concern because, historically, GSA's construction costs appear to be high relative to the private sector. For example, a 1997 benchmarking study for the PBS Performance Measurement working group concluded that GSA's unit costs for new construction of office space were well above the private industry and that significant cost savings potential may exist. We are currently analyzing that data to validate the findings; however, the same study also showed that **GSA experienced cost growth (i.e., change orders) in its modernization projects of 28 percent, well above the industry average of 3 percent.**

COMPREHENSIVE TECHNICAL SUPPORT

Historically, GSA has obtained a variety of support services essential to delivering a project, either with in-house professional staff or by contract. Among these services are predesign services (programming, planning, budgeting), design review (code review), construction management and supervision, and occupancy services (inspections and certifications for turnover). **Because of downsizing, and the resulting depletion of technical staff, we can no longer provide these services in-house.** As a result, we are relying more and more on professional contractors to provide these services.

Traditionally, these services have been procured piecemeal in the form of programmers, design managers, construction managers, and commissioning agents to augment GSA in-house experts. Because these are separate contracts, the experience gained by each contractor must be relearned by succeeding contractors. In addition, having multiple contractors involved with one project invariably leads to increased project management burden, complexity, confusion among stakeholders, and increased costs.

BUDGET DEVELOPMENT

GSA has traditionally developed a project's initial construction budget using a number of different methodologies, depending on the type of project and the region. In general, a project's construction budget has been derived using a variety of sources of information, including the customer requirements, engineering reports, perspective development studies, historic cost data, and efficiency and locality factors. **Design budgets and management and inspection (M&I) budgets are developed using look-up tables, which are primarily derived as a function of the construction budget.** After a project is approved and funding is appropriated, an A-E is then selected and given the mandate to design a building that satisfies the customer's requirements while adhering to the approved construction budget. As the design of a project progresses, the onus for ensuring that the project's design is commensurate with the project's construction budget generally lies with the A-E. **Unfortunately, our current practice of relying on an A-E estimate to guarantee the construction price is not acceptable; too often, contractor bids exceed the project's budget and the A-E's cost estimates.** In recent years we have seen an increasing number of requests to use construction contingency funds to award the base contracts.

COST CONTROL/REDUCTION PRACTICES

GSA project managers (PMs) play a vital role in the control of our construction costs and management of project budgets. Unfortunately, we do not always utilize their skills efficiently. For instance, repair and alteration or modernization projects are typically our most complicated projects because they occur in existing, sometimes occupied buildings. Yet, the most junior project managers are usually as-

signed these projects because of their lower cost value and visibility. **Our senior, more qualified project managers are typically assigned to the high-profile, higher cost, new construction projects even though in many instances such projects are easier and less complicated to manage.** We also do not use objective performance measures for judging the performance of our project managers (i.e., cost and schedule growth). Nor do we have an "objective" incentive program for rewarding extraordinary performance or a repercussion policy for PMs whose projects consistently fail to meet the performance targets.

Finally, we do not consistently look for innovative ways of reducing our costs. One significant cost area in which we believe cost reduction is possible is in our construction-related insurance costs.

MANAGEMENT INFORMATION SYSTEM

We do not have an efficient, reliable, user-friendly construction management information system (MIS). As a result, we spend a considerable amount of time and effort collecting project data to monitor our performance and identify both best practices (i.e., success stories) and problem areas from both a regional and organizational perspective. In addition, our project managers lack an automated tool for validating a contractor's proposed project and payment schedule (i.e., proposed project S-curve) and for determining the overall health of their projects relative to other similar types of GSA projects. For example, PMs have no way to determine whether the amount of cost growth on a project is within the expected range. Finally, we have no reliable way of providing our customers with real-time information about their projects.

Procurement Methodology

In recent years, GSA procurement has undergone substantial changes. The number of procurement options for construction has increased dramatically, and construction teams have aggressively embraced the opportunities for experimentation. Also, studying other practices, such as design-build, has led us to explore incorporating procurement methodologies that will provide us the opportunity to engage some of these best practices.

We identified four areas within the procurement arena that offer significant potential for achieving construction excellence:

- **Selection of construction contractors**
- **Selection of construction managers (CMs)**
- **Procurement of technical support**

- **Use of small, small disadvantaged, and woman-owned businesses (SB/SDB/WOB).**

CONSTRUCTION CONTRACTORS

Historically, GSA has selected construction contractors based primarily on price, rather than qualifications. That procurement approach has often resulted in less-qualified construction contractors being awarded contracts, with predictable consequences. Low bids result in the lowest initial cost, but usually lead to exorbitant change orders and budget overruns. When we combine this with the pressure of providing the lowest bid based on a set of voluminous construction documents, in which the contractor had no input, we should understand why we incur the following problems:

- **Selecting contractors based on low bid often results in awarding contracts to lesser-qualified firms.**

- **Contractors commit to a low initial cost, but position themselves to overcome potential losses with subsequent change orders,** for which voluminous construction documents afforded them a better prospect.

- Adversarial relationships usually occur due to the previous issues and the poor timing in forming the team.

We have experienced an average of 29 percent in cost growth due to "unforeseen conditions," many of which may have been foreseen if we had a top quality, cooperative team together earlier in the delivery process. Claims and litigation have been significant; however, due to how they are funded and recorded, there is no clear record of how many we have per project. Industry is certain that, should we revolutionize our procurement methodology, we can significantly reduce the claims and litigation.

CONSTRUCTION MANAGERS

CMs have become a necessary and desirable part of the GSA management team, particularly in their role as advisors. Because of varying legal interpretations, **GSA is inconsistent in the method used to select CMs across the country.** Some regions continue to use source selection procedures (i.e. price plus qualifications) to select CMs, while others have used the Brooks Act A/E selection process for CM selection based solely on qualifications.[4] This in turn has led to confusion within the construction industry regarding what type of CM service we are procuring and how.

[4] The use of the Brooks Act procurement allows a completely qualifications based selection to occur. Price does not become a factor in the discussion of who should be selected. Only during negotiations with the selected firm does price become important.

In addition, **when we have procured the services of a CM using the source selection methodology, too often the CM's proposed fee (rather than qualifications) becomes the deciding factor in the final selection.** This often results in the CM providing a level and quality of service below what GSA expects, thus causing subsequent confusion and debate between the CM and GSA.

SMALL, SMALL DISADVANTAGED, AND WOMAN-OWNED BUSINESSES

Just as we are mandated to adopt the best practices to improve our delivery of projects on time and within budget, we must adopt the best practices to carry out the socioeconomic goals mandated by P.L. 95-507. One of those is to aggressively stimulate participation of small, small disadvantaged, and women-owned businesses in our programs to the greatest extent practicable. Historically, we have demonstrated some success in doing so on work that can be contracted directly with these enterprises, but our success is mixed in stimulating subcontracting on major projects.

A frequently reported complaint from small businesses is the fact that they are often listed in contract bids to bolster the prime's qualifications but after the contract is awarded, the same small business does not receive the work from the winning prime contractor. **Part of the reason for this marginal success may be our traditional concept of enforcing subcontracting plans.** In the past, we adopted a "command and control" mentality by setting arbitrary targets, requiring contractors to give us unrealistic plans to meet these targets, and then "policing" contractors to see if they complied.

RECOMMENDATIONS

We have identified a number of specific actions that GSA can take to develop a more effective construction program and to ensure that its customers are highly satisfied with its services. **Our recommendations are as follows:**

- **Adopt best business practices**
  - ➤ Obtain customer commitment on project scope, schedule, and cost
  - ➤ Adopt a new approach to partnering
  - ➤ Simplify preparation of construction documents
  - ➤ Adopt a phased construction methodology
- **Adopt best management and cost control techniques**
  - ➤ Consolidate technical support services into one comprehensive support contract
  - ➤ Improve the budget development process (e.g., modify the GSA contractor-fee look-up tables)
  - ➤ Improve our cost control practices (e.g., assign PMs to projects that best utilize their skills)
  - ➤ Develop innovative cost reduction practices, such as providing wrap-up insurance
  - ➤ Improve the existing MIS
- **Adopt best procurement methodologies**
  - ➤ Use price and qualifications-based procurement for construction contractors
  - ➤ Use qualifications-based procurement for construction managers
  - ➤ Adopt aggressive SB/SDB/WOB outreach program for subcontracting.

The following subsections discuss each recommendation in more detail. Where possible, we also identify potential benchmarks that GSA could use to assess its progress.

Adopt Best Business Practices

Obtain Customer Commitment

From the initial concept design through construction completion and building occupancy, an integrated, cohesive project team should be in place to ensure the appropriate inclusion of all key disciplines and a unified approach toward the project's success. The project team should include the A-E, CM, construction contractor, GSA, and most important, the customer. **It is absolutely critical to the project's success that we clearly understand our customer's needs, desires, and expectations.** As experts in the design and construction of quality buildings, it is our responsibility to provide our customers with sound advice and reliable information (e.g., cost estimates) throughout the development of the project, but particularly when choices need to be made.

From the start of the project delivery through design development, the entire team must make a disciplined commitment to maintaining agreements relative to project scope, schedule, and budget. Occupancy Agreements between GSA and our customers on scope, budget, schedule, and rent should be strengthened and adhered to. Ultimately, the team's goal should be to make last-minute scope modifications, delayed schedules, and significant cost escalation a thing of the past. The Administrative Office of the Courts is very supportive of the Occupancy Agreement as the means of locking in an agreement.

Should customers make scope changes, they should be held accountable for the cost escalation that results. The new PBS rent policy is designed to do that. This new policy demands that capital development and improvement projects account for all customer improvement construction costs, because these costs are directly amortized into the rent. A draft version of the modified Occupancy Agreement is under development by the Office of Portfolio Management in cooperation with the Pacific Rim Region.

Adopt New Approach to Partnering

GSA's partnering commitments have produced higher quality and more economical construction projects. Moreover, **the partnering approach results in a more cohesive project team, thereby increasing job-site harmony. As a result,** compared with nonpartnered projects, **partnered projects have fewer postcompletion claims and schedule extensions.**

GSA should improve and expand its partnering commitments. First, GSA should improve its contractor selection process. **GSA should select construction partners that have:**

- **business goals and objectives that are compatible with those of the GSA, the primary tenant for the project, and the A-E;**

- **a proven track record of satisfied clients and successful projects;**
- **good working relationships with local trade organizations and the subcontracting community; and**
- **a strong corporate leadership and commitment to partnering with building owners and developers.**

An improved selection process will increase the scope and effectiveness of GSA's partnering commitment.

GSA can also improve the likelihood of successful partnerships by selecting contractors and awarding contracts no later than the Tentative Design Phase (i.e. 35 percent design completion) milestone. By doing this, the contractor can participate as a full partner in critical decisions affecting construction. GSA and the A-E recognize the contractor as a valuable member of the development team instead of an "outsider" trying to cheapen the design intent. The contractor's Value Engineering will be more effective, saving money in areas of the project where appropriate.

Second, GSA needs to adopt a methodology that accomplishes the following team goals:

- **Establish a cohesive relationship among all-team members with a consensus and commitment to accomplish the project objectives.**
- **Establish open lines of communications throughout the team.**
- **Establish a high level of trust among all team members.**

The Office of Business Performance, in collaboration with the Construction Industry Institute (CII), will develop a guideline modeled after the CII methodology in the appendix.

To be a good partner, GSA also needs to be prepared to pay the right price up front, or at least be willing to acknowledge that customary change order markups are inadequate for the highly specialized buildings we construct. Clearly, partnering can do nothing more than open the door to a good working relationship with the construction contractor, but that relationship can be reinforced by other means. For instance, the builder should be recognized at our biannual design awards ceremonies. Harry Cobb may have designed the intricate *conoid* of the Boston Courthouse, but Clark Construction had to build it.

SIMPLIFY CONSTRUCTION DOCUMENTS

According to the AIA, architects for GSA projects should be allowed to follow industry standards and practices, notably, providing construction documents with a level of detail commensurate with the type of contractor procure-

ment to be used and allowing competition for customized products before the design is complete, not after. Contemporary procurements must enable an early purchase of customized building components. For example, the curtain wall subcontract for a high-rise office building can be selected through a separate procurement. Once selected, the subcontractor can work collaboratively with the architect to complete a design. This subcontractor, after being competitively selected, would be responsible for the building component.

As suggested by several prominent architects that attended our symposium, GSA's rigid requirements relative to the preparation of construction documents should be revised to be more similar to those used by the private sector. Architects should only be required to prepare construction documents in sufficient detail to portray the physical characteristics of the building and allow for establishing a contractual agreement. The responsibility for developing detailed specific design and selecting construction techniques should be left to the contractor and its suppliers. The specific level of detail in the design should be commensurate with the type of contractual agreement to be used with the construction contractor—that is, less detail is required in the construction documents for a design-build contract than is required for a design-bid-build contract arrangement.

The AIA and AGC have agreed to have their respective documents committees jointly support GSA in developing new guidelines to simplify construction documents.

In addition, as endorsed by the CMAA and AIA, the project team (A-E, construction contractor, CM, GSA, and the customer) should jointly perform constructability and value engineering reviews at critical stages (60, 95, and 100 percent) of the document preparation process. Quality control certifications should be provided at the conclusion of each review. Ideally, accountability for the quality of the construction documents should reside not only with the A-E, but also with all of the project team members.

Finally, similar to several new initiatives being led by our Office of Business Performance, GSA should develop an incentive program for the A-Es. The program should establish performance targets relative to the quality of the construction documents, and it should recognize and reward performance that meets or exceeds these targets. The targets could be based on the quality of the documents in terms of the constructability of the project as well as the "buildability" of the project; an example of a target is the percentage of change orders resulting from errors and omissions.

ADOPT A PHASED CONSTRUCTION METHODOLOGY

To accelerate project delivery and reduce conflicts during construction, we should adopt a construction methodology that enables us to phase projects in three basic increments (foundation, base building, and tenant build-out). The

foundation phase is where we experience most of our unforeseen conditions, and the tenant build-out phase is where we experience most client changes during construction. If we build decision milestones into the project by separating these phases, we will allow time to incorporate the findings at each phase and reduce the adverse impact of any needed changes resulting from these findings. By phasing the project, we can start the foundation construction while the base building is still in design and thus better incorporate the changes resulting from any unforeseen conditions. Phasing the design and construction of tenant build-out separately enables the client to make changes later in the project delivery phase without an adverse impact.

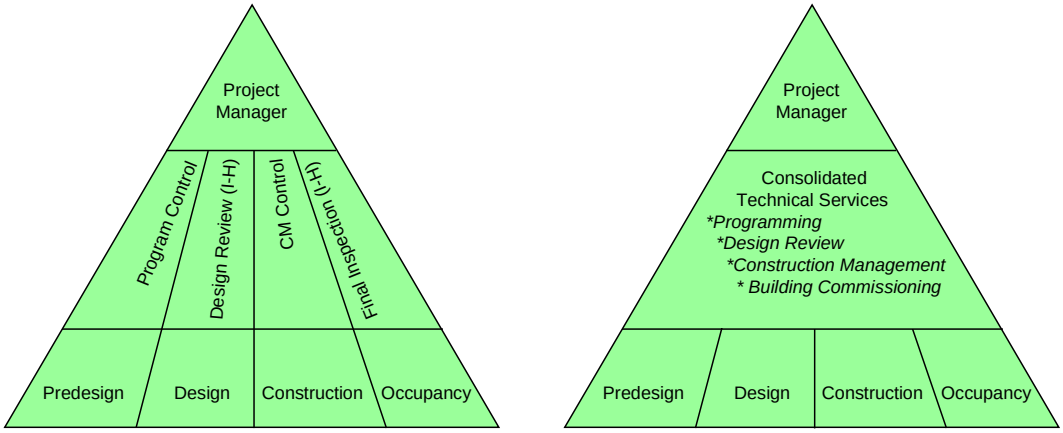
Phasing does not require separate procurements. Instead, one A-E would design all three phases, and one contractor would accomplish the construction of the three phases.

Adopt Best Management and Cost Control Techniques

CONSOLIDATE TECHNICAL SUPPORT SERVICES

With our increasing reliance on outside contractors and the need to provide a project with consistent support from the start to the finish to ensure that we maintain scope, schedule, and cost control, **GSA should consolidate a number of important technical support services into one comprehensive support contract.** Typical technical services to be bundled and provided by a single contractor could

Traditional vs. Construction Excellence Method



include programmers, design managers, construction managers, and commissioning agents. This contractor would be responsible for the overall quality, schedule, and cost control of a project by providing continuous technical support to GSA from the initial planning of a project to the building's turnover to our customer. Their support would include procuring subcontractors as needed to ensure that the

projects are designed well and will function properly once they are turned over to GSA. In short, this contractor would provide the continuity required to ensure that projects are completed on time and within budget and that customers are satisfied. We will also gain "lessons learned" to apply to the next project.

Recently, the Design Center of Expertise developed a concept, which received overwhelming industry support, to combine these technical services under a "professional services" contract (see the appendix). The Design Center has issued 5-year contracts to five firms to provide such services to the regions. The regions may use those contractors as needed.

IMPROVE BUDGET DEVELOPMENT PROCESS

GSA should develop and adopt a standardized procedure for estimating project costs. Each region should utilize the same approach, same types of information, and similar assumptions. This will assist greatly in providing a consistent picture to our stakeholders and thus better justify our budgets, reducing the risk of arbitrary reductions. **Ideally, A-Es, the technical support contractors (or construction managers depending on project size and complexity), and construction contractors should all be involved in the development and verification of initial budgets,** particularly for major and special projects. We recognize that, given the budget formulation and appropriation process, this may be unrealistic for total project budgeting; however, we can apply some of this resource to assisting with developing the construction budget, provided they are on-board early enough. This will also strengthen our ability to hold the team members more accountable for the accuracy of the budget. We will work with the Office of Portfolio Management to develop enhanced guidelines to further this concept.

In addition, **the existing look-up tables should be reviewed and modified as necessary to ensure that quality professional services (A-E, CM, etc.) can be fully funded.** For instance, in large construction projects, full-time on-site A-E representation would significantly improve the efficiency of the daily construction administration services. However, under the current format, the look-up tables do not allocate sufficient funding to the A-E (and other service contractors) to provide this level of service. The Office of Business Performance is currently reviewing the look-up tables and plans to modify them soon.

Once the design of a project has been initiated, the on-board technical support contractor (or CM) and construction contractor should provide cost estimates independent of the A-E's estimate. All parties should be accountable for their estimates and assume some risk for their accuracy. Appropriate action should be taken for unsatisfactory contract performance including, but not limited to, performance-based fee adjustments and possible temporary exclusion from future work with GSA under debarment procedures for serious contract vio-

lations or a history of failure to perform or of unsatisfactory performance on Government contracts.

IMPROVE COST CONTROL PRACTICES

Since GSA project managers have a vital role in the success or failure of our construction projects, it is imperative that we utilize their knowledge and skills to the fullest extent possible. **Our most seasoned and skilled project managers should be assigned the most difficult and complex projects, not necessarily the most visible and expensive (i.e., R&A and modernization versus new construction).** In addition, we should develop objective performance measures for our project managers (e.g., amount of cost growth) so extraordinary performance can be recognized and rewarded, and poor performance can be identified and corrected. The performance measures should be developed for the various types of projects managed and should be based on realistic, objectively measured goals. Performance judgments should be based on a number of projects, not just one or two. The Office of Business Performance with technical support from the Project Management Center of Expertise should develop this guideline and criteria.

ADOPT INNOVATIVE COST REDUCTION PRACTICES

GSA needs to identify innovative ways to add value to the products that we provide our customers. **One such innovation is to provide wrap-up insurance (workers compensation, general liability, etc.)** for our projects where feasible. Wrap-up insurance allows an owner to provide the loss coverage by consolidating the insurance coverage into one program, instead of having the general contractor and subcontractors provide it individually. The wrap-up program uses loss-sensitive coverage to provide financial incentives to the owner to run a safe and efficient operation, thereby potentially decreasing workers compensation claims. The enhanced safety programs generally significantly improve work-site safety, avoid injuries, and increase productivity, which can decrease premiums. The owner, however, incurs risk and management costs previously borne by the contractor. GSA has evaluated wrap-up insurance and will be discussing with the regions ways to implement it, where appropriate, for future projects.

IMPROVE MANAGEMENT INFORMATION SYSTEM

An efficient, reliable, user-friendly construction management information system is essential for tracking our construction projects consistently and accurately. Currently, no such system exists throughout the agency. Although preliminary efforts are under way to implement an MIS (i.e., “PM Toolbox”), we need to make sure that system will meet not only all of our needs but also be accessible to our customers. Specifically, the MIS must allow for easy project data collection so we can monitor our performance and identify both best practices (success stories) and problem areas from both a regional and organization perspective. In addition, the MIS should assist our project managers in tracking the

progress and "health" of their projects and should provide our customers with reliable real-time information relative to their projects.

"PM Toolbox" has the potential to be technologically proficient software; however, we believe we can make significant enhancements to make it more user friendly, simplifying data input and retrieval, to provide the essential management information to monitor scope, schedule, and cost. The National Capital Region has volunteered to take a leadership role in enhancing the Toolbox software, in cooperation with the Office of Business Performance.

Adopt Best Procurement Methodologies

Use Price and Qualifications-Based Procurement of Construction Contractors

In accordance with AGC's recommendation, GSA should hire construction contractors based on their price and qualifications, as well as their past performance on projects. Several source selection approaches are available that do not rely solely on the lowest bid price (see the appendix) such as the trade-off process, and the lowest price technically acceptable source selection process (see FAR subpart 15.1). Pre-qualification of contractors is permitted as prescribed in FAR subpart 9.2. **Two-phase design-build selection procedures, described in the FAR subpart 36.3, allow selection of not to exceed five firms based on qualifications only.** Price is not a factor in the first phase, but it must be considered in phase two, along with the technical evaluation factors. The key aspect of these methods is the ability of GSA selecting officials to use experience and past performance to aid the selection of the constructor.

When the uncertainties involved in contract performance do not permit costs to be estimated with sufficient accuracy to use a fixed price contract, another type of contract should be considered. The alternatives include, but are not limited to, a cost plus fixed fee contract with a guaranteed maximum price (which is a combined cost reimbursement and fixed price contract) and a fixed price incentive contract (see FAR 16). The guaranteed maximum price or ceiling price contained in such contracts would be subject to an equitable adjustment for unanticipated post-award events (e.g. changes in design, Government caused delays, differing site conditions) under the standard FAR clauses included in construction contracts. Regardless of the type of contract selected, in accordance with the Competition in Contracting Act, the total price or estimated total cost of all work required under the contract must be competed and evaluated prior to contract award.

The Office of Acquisition Policy and the General Counsel's Office have developed a guideline for Construction Project Delivery that outlines the procurement concepts on which we base our guide. The Courts Management Group, in collaboration with the regions, will develop a generic scope of work to use as a procurement guide. Also, the Project Management Center of Expertise has developed a

draft supplemental Performance Evaluation Form (see appendix) which may be used to evaluate construction contractor past performance.

USE QUALIFICATIONS-BASED PROCUREMENT OF CONSTRUCTION MANAGERS

A contract with a construction management firm to serve as an advisor is a professional service for which we should select the highest qualified professional (as we currently select A-Es) and negotiate a reasonable fee for the specified services. This approach would be consistent with the preference within GSA project delivery teams and the private industry, including the CMAA, which strongly endorses this concept.

On those projects for which we will continue to procure CM services (in lieu of comprehensive technical support services), we believe the Brooks A/E Act procurement procedures, which allow a completely qualifications-based selection process for certain types of professional services, are applicable to CM professional services because of the nature of the services these firms provide. Specifically, construction managers provide professional services that impact the life, safety, and health of the federal worker, and as such, their qualifications should be the sole factor in selecting the best firm (i.e., the basic tenet of the Brooks A/E Act). Price does not become a factor in the determination of who should be selected. Price negotiations are conducted with the highest qualified CM.

ENHANCE OUTREACH PROGRAM FOR SB/SDB/WOB FIRMS

We should expand our efforts to encourage our prime contractors to use SB/SDB/WOB firms as subcontractors, following the new approach developed by our Office of Enterprise Development. Specifically, **the approach involves partnering with the private sector to develop realistic SB/SDB/WOB subcontracting goals and assisting with the identification of qualified enterprises** with which they can contract to successfully reach the goals. GSA has the capability and leverage to initiate an aggressive outreach program that enables us to set fair goals based on a market availability and to facilitate the development of relationships that may result in successful business ventures between prime contractors and SB/SDB/WOB subcontractors. GSA believes that by subcontracting with the largest and most successful construction contractors in the country, small firms will gain experience that will enable them to "graduate" from the program and compete on a level playing field with other companies for larger jobs.

The National Capital Region has developed an aggressive approach, and a desk guide to help them in that endeavor (excerpt in the appendix). In conjunction with the Office of Enterprise Development, we are condensing the NCR guide to provide a national guideline.

Thanks to a new approach by our Office of Enterprise Development, we have taken a different tack with the private sector, by partnering with them in developing realistic goals and helping them identify prospects with whom they can contract to successfully reach their goals. We have the capability and leverage to initiate an aggressive outreach that first enables us to set fair goals based on a market availability, and then to facilitate the development of relationships that may result in successful business ventures between prime contractors and small business, small disadvantaged business, and women-owned business subcontractors. One Best Practice developed over the past two years by the Office of Enterprise Development is the Procurement Networking Session. These Pre- and Post- award conferences with the GSA procurement team, potential prime contractors, and the small business firms, allows companies to identify others interested in the contract and to pursue teaming agreements, subcontracting, and bidding together on GSA procurements. Post-award sessions allow the winners to identify subcontracting firms from among the small business community. This is a win-win approach. It helps GSA speak to the business community, 100-200 firms at a time, versus 100 phones calls or individual inquiries, and it helps all involved identify capable firms.

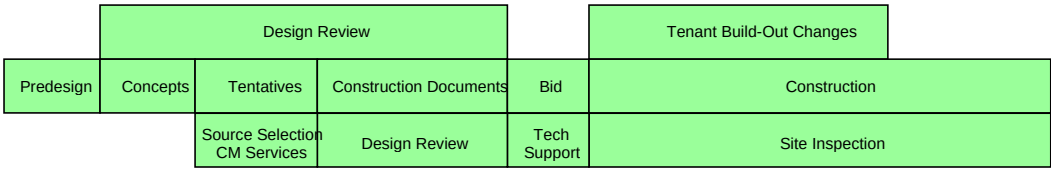
CONSTRUCTION EXCELLENCE METHODOLOGY

The preceding sections describe various recommendations to improve project delivery and accomplish the Construction Excellence initiative. **Of these recommendations, there are critical ones that interrelate and, when combined, provide a revolutionary project delivery methodology. They encompass the best practices that will place GSA in a leadership position in the building industry:**

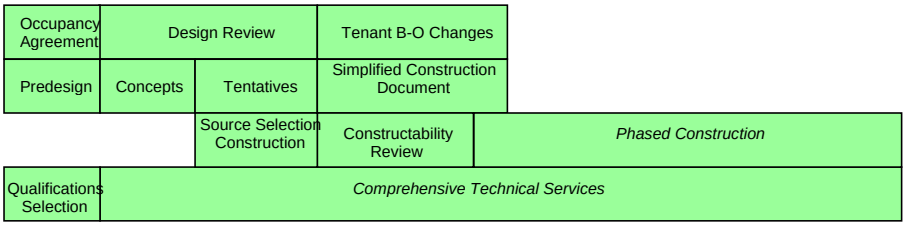
- **Obtain customer commitment to scope, schedule and cost.**
- **Simplify construction documents.**
- **Adopt phased construction for foundations, base building and tenant build-out.**
- **Consolidate technical support services into a comprehensive technical services contract.**
- **Use price and qualifications-based procurement for construction contractors and bring the contractors on earlier.**

These form the backbone of our Construction Excellence initiative and help accomplish other recommendations.

Traditional vs. Construction Excellence Methodology



Traditional



Construction Excellence

Consequently, **we have combined the foregoing recommendations into a Construction Excellence Methodology** that will revolutionize how we deliver large-scale projects. When implemented, **our Construction Excellence methodology will serve as a hallmark in demonstrating best practices in the building industry.**

BENEFITS

All of our recommendations will result in tangible, measurable benefits to the organization. Among them are the following:

- ***Reduce change orders.*** Changes requested by our customers account for nearly half of all change orders on our projects. **We can substantially reduce the number of change orders by making mutual commitments in the Occupancy Agreement** and subsequently making our customers accountable for changes they make.

- ***Reduce claims and litigation.*** By bringing on the best-qualified contractor early in the design phase, **we can resolve potential conflicts before construction starts, thus avoiding subsequent claims and litigation.** This can also have a positive impact on design deficiencies, which total approximately one-quarter of our change orders.

- ***Reduce design deficiencies.*** We can eliminate voluminous and unnecessary design details **by simplifying construction documents, thus reducing the risk of design errors.**

- ***Improve the likelihood of completing projects on time and within budget.*** By bringing the team together earlier and **fostering effective partnering, all parties will have a better understanding and commitment to the project objectives** (specifically, scope, schedule, and cost), thus improving the prospect of meeting our objectives. This will also provide greater incentive (positive and negative) to meet commitments.

- ***Reduce overall construction project costs.*** Construction project costs can be reduced in a number of ways, for example, by reducing the effort required to prepare construction documents (which reduces the design costs) **and by adopting cost-cutting ideas, such as owner-controlled wrap-up insurance.**

- ***Enable GSA construction projects to be completed faster.*** By bringing on the construction contractor during the design phase, **we can eliminate the 3- to 6-month construction procurement phase from the critical path,** reducing project delivery time accordingly. **Simplifying the development of construction documents,** which now accounts for approximately 65 percent of the total design time, also **will substantially reduce the time required for the design phase**, which now averages two years.

Many of our recommendations will contribute to solving more than one of the findings we identified and, therefore, will help GSA create an environment in which construction excellence will naturally develop. Table 1 shows the relationship of our recommendations to benefits realized.

Table 1. Relationship of Recommendations and Benefits

Recommendation	Reduce change orders	Reduce claims and litigation	Reduce design deficiencies	Complete projects on time within budget	Reduce total project costs	Complete projects faster
Obtain customer commitment on project scope, schedule, and cost	X					
Adopt a new approach to partnering	X	X		X		
Simplify preparation of construction documents	X		X		X	X
Adopt a phased construction methodology	X	X	X			
Consolidate technical support services into one comprehensive quality control contract	X		X			X
Improve the budget development process				X		
Improve cost control practices and develop innovative cost reduction practices					X	

Table 1. Relationship of Recommendations and Benefits

Recommendation	Reduce change orders	Reduce claims and litigation	Reduce design de-ficiencies	Complete projects on time within budget	Reduce total project costs	Complete projects faster
Improve the management information system				X		
Use price and qualifications-based procurement for construction contractors	X	X				
Use qualifications-based procurement for construction managers	X		X			X
Adopt SB/SDB/WOB outreach program for subcontracting				X		

IMPLEMENTATION PLAN

The biggest challenge we now face is developing detailed guidelines for each recommendation obtaining national consensus (from both the public and private sectors), **then implementing them throughout our regions.** To meet that challenge, **we plan to establish implementation teams and a virtual Construction Excellence organization,** as discussed in the following subsections. In addition, **it is essential that we gain the buy-in of all staff members to ensure that the Construction Excellence program is successful.** Therefore, our implementation plan includes a communications plan for promoting our recommendations, as well as providing orientation and training.

Plan #1

Products	Schedule	Objectives	Responsible
Internal Communications			
Internal Briefings on Final Report	11/26 to 12/25 1998	Formally brief senior management team	C.E. Advocate
Administrator and Commissioner message to PBS employees	January 1999	Establish new policy	C.E. Advocate/Office of External Affairs
Desk Guide	Spring 1999	Give guidance for new policy	Region 5/C.E. Teams
Can't Beat GSA Construction Conferences	Spring 1999	Change culture and "How to"	C.E. Advocate/Office of External Affairs
Develop Case Studies on New Projects	Spring 1999	Show benefits of C.E.	C.E. Teams
Development of Performance Measures and Incentives	Spring 1999	Measure success of C.E.	Office of Business Performance
External Communications			
Press release for business trades and professional associations	12/25 1998	Communicate to major partners AGC, AIA, DBIA, etc.	Office of Business Performance
Distribute final report to RPEIAC group	Approximately 11/25 1998	Raise awareness and gain buy-in	C.E. Advocate
Distribute final report to all associations	January 1999	Communicate results of industry and government work groups	C.E. Advocate/Office of External Affairs
OMB Briefings	TBD	Gain consensus	Portfolio Management
Hill Briefings	TBD	Gain consensus	Portfolio Management
Continuation of public/private liaison	Ongoing to Fall 1999	Fulfill implementation plan	C.E. Advocate/Office of External Affairs

Implementation Teams

We are planning a transition from leadership by the go teams to leadership by several implementation teams—one for each recommendation. Each team, comprising individuals from GSA and the private sector (primarily, those experts and organizations already involved in this initiative), **will be responsible for developing detailed guidelines specifying how the recommendation is to be implemented. The guidelines will become part of a Construction Excellence desk guide**, which is being coordinated by the Great Lakes Region. Table 2 lists the recommendations and the implementation team members. We are still in the process of identifying team members, for which will use feedback to this report to complete the team structure.

Table 2. Composition of Implementation Teams

Recommendation	Go Team	PBS	GSA	Private Sector
Obtain customer commitment on project scope, schedule, and cost	Myron Goldstein	Renee Tietjen Joe Lawler Tim Timberlake	David Bibb	
Adopt a new approach to partnering	Myron Goldstein	Myron Goldstein Renee Tietjen		Bill DeWolf (AGC)
Simplify preparation of construction documents	Myron Goldstein	Ed Feiner		Dale Ellickson (AIA)
Adopt a phased construction methodology	Bill Guerin	Myron Goldstein		
Consolidate technical support services into one comprehensive quality control contract	Les Shepherd	Ed Feiner		Harry Gordon (FAIA) John Valley (AIA)
Improve the budget development process	Les Shepherd	Renee Tietjen		
Improve cost control practices and develop innovative cost reduction practices	Les Shepherd	Renee Tietjen Myron Goldstein		D. H. Lloyd
Improve the management information system	Les Shepherd	Rick Hendricks Tom Graves		
Use price and qualifications-based procurement for construction contractors	Bill Guerin	Henry Singer	Cecilia Davis Harmon Eggers	Dirk Haire (AGC) Georgia Tech
Use qualifications-based procurement for construction managers	Bill Guerin	Henry Singer	Cecilia Davis	Larry Deren (CMAA) Bob Wilson (CMAA)
Adopt SB/SDB/WOB outreach program for subcontracting	Bill Guerin	Rick Hendricks	Dietra Ford	

Notes: AIA = American Institute of Architects; AGC = Associated General Contractors; CMAA = Construction Management Association of America.

Construction Excellence Organization

GSA (headquarters and regions) already has organizations with responsibilities that are relevant to the Construction Excellence initiative. Therefore, we are proposing to continue our concept of a virtual organization by delegating responsibility for leadership of various aspects of the initiative to existing organizations. **Those organizations, and their roles in the virtual Construction Excellence organization, are as follows:**

- **Construction Excellence Advocate**
  - ➤ Provide overall leadership and direction through the implementation phase
  - ➤ Manage the implementation phase and ensure objectives are accomplished
  - ➤ Direct the development of the communications plan
  - ➤ Provide direction to the implementing teams and liaison with relevant organizations in the development of the desk guide
  - ➤ Coordinate and collaborate with customers and stakeholders
- **Office of Business Performance**
  - ➤ Continue data analysis for the various recommendations to assist in developing detailed guidelines
  - ➤ Develop performance measures to determine success in implementing recommendations
  - ➤ Provide technical support to the implementation teams
- **Project Management Center of Expertise**
  - ➤ Act as expert on guiding best practices
  - ➤ Serve as “custodian” for the desk guide
  - ➤ Assist regions in implementation and provide technical support to the implementation teams
  - ➤ Conduct benchmark analyses (in cooperation with the Office of Business Performance)

- **Design Excellence Center of Expertise**
  - ➤ Act as expert on those recommendations affecting the design process and A/E services
  - ➤ Provide technical support to the implementation teams
- **Courts Management Group**
  - ➤ Act as stakeholder and customer representative on recommendations directly affecting the customer
  - ➤ Provide technical support to the implementation teams
- **Office of External Affairs**
  - ➤ Assist in designing and implementing an internal/external communications program
  - ➤ Provide liaison and coordination with regional/national office
  - ➤ Assist in preparing promotional material and publications
- **Regional capital improvements organizations**
  - ➤ Implement recommendations
  - ➤ Assist in benchmarking analyses
  - ➤ Promote improvements to customers.

SEGUE ISSUES

Given our charter, we focused on the project delivery process as it relates to construction. We discovered, however, several issues that should be pursued, which while outside our charter certainly can influence the success of a project:

- ***Budget formulation and authorization***. Some issues have arisen regarding how we formulate budgets and obtain authorization that have a subsequent impact on project delivery:

  - ***Prospectus preparation***. We develop in-depth analyses through prospectus development studies, yet we only present sketchy financial data in a two-page narrative document that does not adequately describe or justify a project. This can have an adverse impact on the limits authorized. We need to consider modifying the format and content of the prospectus to make it a better representation of project plans.

  - ***Budget formulation.*** We do not present sufficient data, in an appropriate format, to successfully justify our budgets or obtain sufficient funding to successfully manage within our limits. We need to reexamine the level of data and how we structure the budget to better obtain sufficient funds, with sufficient reservation amounts. We will work with the Office of Portfolio Management to study these issues.

- ***Improvements in design delivery.*** Although we are proposing some changes to improve the timeliness in delivering designs, there may be other steps that we can take to improve overall design delivery. Designs on large-scale projects take, on average, nearly 2 years to accomplish. While our Construction Excellence methodology should reduce that time frame, we should consider other improvements in the design phase to shorten this time frame more in keeping with industry standards. We will work with the Design Excellence Center of Expertise on this initiative.

- ***Sustainable design***. We focused on how to improve our project delivery process, but we also need to focus on improving the product. That is, we need to broaden our perspective on what we are designing to ensure we are meeting our environmental goals for a quality work environment and our building methods to ensure that we construct a quality product. We will work with the Design Center of Expertise, in conjunction with the Office of Business Performance and the Office of Strategic Innovations, to study these practices.

APPENDIX

Findings

- Cost Growth Report
- Georgia Tech Guide to Project Delivery
- NCR Benchmarking Study
- Symposium Report
- Building Commissioning Paper
- Alternative Procurement Methods

Recommendations

- CII Approach to Partnering
- Acquisition Policy/General Counsel Guide
- Draft Construction Contractor Performance Evaluation Criteria
- Desk Guide SB/SDB/WOB (excerpt)
- Wrap Up Insurance Report

(NOTE: The Appendix is voluminous. If you want a copy of part or all of the documents listed above, e mail your request to Bill Lawson at bill.lawson@gsa.gov ***or call 202-501-1025)***